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ABSTRACT

The Zuckerman Affect Adjective Check List (AACL) is used to measure trait anxiety and situation-specific trait anxiety relating to peer interaction, vocational aspiration, and the learning of English, mathematics, science and social studies. The subjects were 262 grade 10 students attending an Australian metropolitan high school. Additional self-report instruments including the Profile of Real/Ideal Scholastic Motivation, the Vocational Preference Inventory, and a friendship questionnaire were utilized in order to identify some of the correlates of anxiety. A correlation analysis was performed on all variables for the whole sample, as well as for males and females separately. Vocational and mathematics related anxiety was highest, whereas trait and peer anxiety was lowest. Females were significantly less anxious than males in peer and trait anxiety, but were significantly more anxious in science anxiety. Anxiety in the academic area increased as the mathematical content of the subject increased. Vocational anxiety was high reflecting the uncertainty about unemployment. Females reflected a concern for pleasing significant others, whereas males tended to be more concerned about academic matters. No significant correlations were found between variables with peer anxiety for either sex in any of the friendship groupings. (RL)

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Anxiety and the School Experience

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Anxiety and the School Experience

As part of a study conducted to investigate the relationship between anxiety and student/teacher interaction, peer interaction, academic achievement and vocational decision making. A sample of 262 Year 10 students were administered Affect Adjective Check Lists (AACL) measuring seven different aspects of anxiety, the PRISM (a measure of self-theory within an educational context) and Holland's Vocational Preference Inventory (VPI).

Vocational anxiety and Maths anxiety scores were highest and Trait and Peer anxiety the lowest. Significant sex differences were found for both Vocational and Maths anxiety with females being significantly less anxious than males. The converse was found in Science where females were significantly higher in anxiety than males. Academic anxiety tended to increase with increasing mathematical content.

High trait anxiety, particularly for females, was found to be associated with concern about peer relationships and the opinions of others. Sex differences were also reflected in measures of peer anxiety - for females, peer anxiety was a major determinant of general anxiety levels while for males, anxiety was more academically based. Of the academic subjects, all but Maths demonstrated patterns similar to trait anxiety.

The personality dimenisons of Masculinity, Status, Infrequency, Self-Control and Extrinsic Motivation were the major correlates of anxiety for secondary school students. High anxious students tended to be conforming, status seeking, insecure and self-depreciating, particularly females. It was concluded that the sex differences found suggest a possible differentiation of coping strategies; coping with anxiety within the school setting is more likely to be achieved by adjusting peer relationships for females while for males the most direct strategy seems to be to meet academic demands.

ANXIETY AND THE SCHOOL EXPERIENCE

It is common experience that anxiety is one of the most pervasive emotions experienced by children in school settings (Stewart, 1978). Schools present an environment that threatens most children in some way or another, either socially, academically, physically or emotionally. Procedures of assessment, streaming and discipline, and the close interpersonal distance of adult with child, and child with child, provide many opportunities for threat and anxiety. Its significance, not only as an unpleasant affect, but also as an impediment to learning, has resulted in intense interest and research in the area (Gaudry and Spielberger, 1971). This research has been hampered by lack of consensus amongst researchers with respect to the meaning and definition of anxiety, and 'a comprehensive and widely held theory of anxiety has failed to emerge' (Phillips, 1978, p.10). Phillips (p.10-14) lists a selection of no less than ten hypothetical constructs of anxiety, including the following:

a) ' ... anxiety arises from a threatened deprivation of an anticipated satisfaction when the threat does not carry complete cognitive certainty'.

(Cattell, 1966, p.47)

b) Izard and Tonkins (1966) suggest that anxiety is a negative affect, subsumed under the category 'fear - terror'.

c) Spence and Spence (1966) break anxiety down into two components, drive (D) and drive stimulus (S_D). Initially, they suggest, increases in psychological stress increases both level of drive and task relevant behaviour. However, further increases in anxiety correspond to an increased frequency of task-irrelevant responses and 'to the extent that performance is adversely affected by them, these irrelevant tendencies will lead to performance decrement'.

(p.313)

A more recent and commonly accepted definition of anxiety is that of Sieber, O'Neil and Tobias (1977, p.32):

'the experience of dread and foreboding based on some diffuse or specific expectation of harm rather than an obvious threat'.

Clearly, definitions may be extended infinitely with little gain in utility - constructs are therefore usually defined in operational terms. Anxiety levels may be inferred from general behaviour, physiological measurements and/or self-report measures. Thus, the type of measurement used is closely related to the concept or operational definition of anxiety that is utilised.

Common physiological measures of anxiety include heart rate, blood pressure, respiration rate and electrical skin resistance (sweating). As autonomic responses can rarely be voluntarily controlled, physiological measures avoid the problem of questionable validity reputed to the subjectiveness of self-reports. However, they are not without some severe problems:

i) Physiological measures are often found to be unrelated to each other, to psychological indices of anxiety, or to the intensity of stress (Morris and Liebert, 1970; Winter, Ferreira and Ransom, 1963).

ii) They are extremely labile and are easily affected by conditions of the experiment other than the experimental treatment itself.

iii) Equipment and administration is expensive. This is a particularly significant handicap in classroom research.

iv) The physiological measures are non-specific, that is, the symptoms of anxiety are those of arousal that may reflect a state other than anxiety.

A vast number of self-report inventories have been constructed or adapted for the measurement of anxiety. The most common of these include:

i) Taylor's Manifest Anxiety Scale (MAS) - based on Spence's constructs of habit strength and drive and adapted from the Minnesota Multiphasic Personality Inventory.

ii) Institute for Personality and Ability Testing Anxiety Scale (IPAT).

iii) Test anxiety Questionnaire (adults), T.A. Scale (students) and T.A. Scale for Children (TAQ, TASC) (Sarason et al, 1960).

iv) The Zuckerman Affect Adjective Check List (AACL), (Zuckerman, 1960).

v) The State-Trait Anxiety Inventory (STAI), (Spielberger and Gorsuch, 1966).

The first three scales above are trait measures which are intended to measure anxiety-proneness. Both the AACL and STAI measure two distinct anxiety concepts, state anxiety and trait anxiety (A-State and A-Trait respectively). Spielberger is a major proponent of the distinction:

> 'State anxiety (A-State) is conceptualised as a transitory emotional state or condition of the human organism that is characterised by subjective, consciously perceived feelings of tension and apprehension and heightened autonomic nervous system activity. A-States may vary in intensity and fluctuate over time.
>
> Trait anxiety (A-Trait) refers to relatively stable individual differences in anxiety proneness, that is to differences between people in the tendency to respond to situations perceived as threatening with elevations in A-State intensity'.
>
> (Spielberger, Gorsuch and Lushene, 1970, p.3)

To these orientations must be added a third - the situation specific Trait measure of anxiety (Lamb, 1976) that measures the anxiety affect in specific situations but over a period of time. Kendall (1978) demonstrates the significant advantages of situation specific Trait measures, as do Mellstrom, Zuckerman and Cicala (1978). The Zuckerman Affect Adjective Check List (AACL) can define state, trait, or situation by simply changing the introduction to the test, unlike the other affect measures that are comprised of items specific to situation. There is a bonus in this utility of the AACL, as scores on trait, state, or situation can be directly compared on the same scale enabling cross-situational studies.

The self-report measures also suffer from potential methodological problems. The major weakness stems from the subjective nature of the inventory, leaving the scores open to the confounding effects of social desirability of responses. An important dimension of self-report anxiety measures may be the confounding effect of defensiveness upon such measures. Defensiveness may refer to a) an unwillingness to admit anxiety resulting in a lower report of anxiety than is actually experienced (delusion of others); b) use of defensiveness as a coping strategy (self-delusion). Several studies have attempted to clarify the defensiveness-anxiety relationship. Hill and Sarason (1966) reported that the negative correlation between test anxiety and achievement increased following adjustment of anxiety scores for defensiveness and Redfering and Jones (1978) have demonstrated the vulnerability of the STAI to this problem. Sarason, et al (1960) developed the Lie Scale in an attempt to isolate low-anxious, high defensive responders on TASC.

Vulnerability to defensiveness is therefore an important factor to consider in selection of an anxiety inventory. In a study comparing the relative susceptibility to defensiveness of STAI and AACL, Docking and Thornton (1979a) provide evidence that the subtlety of the measure and the amount of defensiveness aroused are strongly related. The results suggest that the AACL is more robust than the STAI - not only to defensiveness but to various confounding variables such as order of presentation, the 'test' situation and to 'state' influence over trait anxiety. Another study conducted by Docking (1978) validates the Stait and Trait versions of the AACL against their counterparts in STAI, demonstrates the superior reliability of the AACL, and its versatility as a measure of situation specific Trait Anxiety.

In this study, the AACL will be used to measure Trait anxiety and situation-specific Trait anxiety relating to Peer interaction, Vocational aspiration, and the learning of English, Mathematics, Science and Social Studies of Year 10 students, to provide a basis of further research into anxiety and the school experience.

To view anxiety in context, and identify some of its correlates, this study utilized a number of measures in addition to the AACL, namely:

a) PRISM - Profile of Real/Ideal Scholastic Motivation (Docking, 1979), three measures of self-theory in an educational context;

b) VPI - Vocational Preference Inventory (Holland et al, 1969), which provides measures of an eleven personality dimensions;

c) sociometric information, from which indices of influence, centrality, and prestige can be determined (Linn, 1976);

d) data indicating sex, and level of study in each of the core subjects (academic streams - Basic to Advanced).

As findings related particularly to vocational choice and anxiety have been reported elsewhere (Docking and Thornton, 1979b), this report will concentrate upon the academic and social dimensions.

METHOD

Subjects. A sample of 262 Year 10 (15 year-old) students in a metropolitan high school were involved in the study. Forty-six percent of the sample were male. The sample represents 85% of the students enrolled in Year 10 of the school, the remainder being absent from the school at the time of testing.

Instruments. A test booklet was administered, comprising the PRISM instrument, seven AACL pages (Trait, English, Mathematics, Science, Social Studies, Vocational and Peer Anxiety), a page for friendship groups, and a response sheet for the VPI.

The PRISM (Profile of Real/Ideal Scholastic Motivation) is used to provide an objective description of an individual's frame of reference relating to education. It was first developed as part of the instrumentation for a study of staff/student cognitive style similarity and student achievement at tertiary level (Docking; 1976a, 1976b). PRISM consists of three component factors or subscales:

a) Involvement with ideas (Volume).

b) Diversity of ideas (Breadth).

c) Acceptance of externally set goals or standards (Motivation).

The items are statements about education to which students respond on a four-point scale. Individual scores are determined by summing point values for each statement. Extensive validation has been conducted on the scales (Docking, 1976a). In 1978, PRISM was updated, revised and validated to allow for wider application of the profile (Docking, 1979).

The VPI identifies the following eleven personality dimensions from responses to vocational preferences: Realistic, Investigative, Social, Conventional, Enterprising, Artistic, Self-Control, Masculinity, Status, Infrequency, and Acquiesence.

The friendship questionnaire asked the students to indicate the names of the peers with whom he or she would like to 'mix with at lunch time', underlining the best friend in the list.

Data Analysis. A correlation analysis was performed on all variables for the whole sample, and males and females separately. Because of computing limitations, the sample was split into three inter-related friendship groups for the calculation of the sociometric indices, and correlational analysis performed with these indices for each complete subgroup, and for each group divided by sex.

The data was analysed to check on the validity of the PRISM for this group. Data demonstrating its validity is reported elsewhere (Docking and Thornton, 1979b).

The significance level was set at 0.01.

RESULTS

General Comparisons. The anxiety levels in each of the seven situations are shown in Figure 1.

Insert Figure 1 about here

The order of anxiety level, with Vocational and Mathematics related anxiety highest and Trait and Peer anxiety lowest, is reflected in both male and female responses ($p = .89$, $p < .01$). Significant male/female differences are in Peer anxiety and Trait anxiety where females are significantly less anxious ($t = 3.0$, $p < .002$, $t = 2.6$, $p < .01$) and in Science anxiety, where females are significantly more anxious ($t = -3.1$, $p < .002$).

The overall order indicated in Figure 1 is not unexpected, with anxiety in the academic area increasing with increasing mathematical content, high vocational anxiety reflecting the current uncertainty about unemployment, and peer anxiety reflecting the comfortable, stress-free environment of one's chosen peer group. Trait anxiety lies logically between the peer group environment and the academic environment, rather like the average of state anxiety in these settings.

Male/female anxiety differences will be discussed in full in the sections that follow.

Trait anxiety. The major correlates of trait anxiety are shown in Table 1.

Insert Table 1 about here

The highly trait anxious student is very clearly concerned about the opinions of others and about his or her relationships with peers. Females in particular reflect this concern for pleasing significant others, whereas males tend to be more concerned about academic matters.

Trait anxiety is likened by some to an average of anxiety states experienced by the individual; others describe it as anxiety proneness, a fixed latent trait that underlies the strength of response to stressful situations. The findings of this study suggest the first conceptualization, where trait anxiety can be defined as 'a remembered, general level of A-State anxiety' (Barker, Barker and Wadsworth, 1977, p.455) lying as it does between academic and peer related anxiety. Its correlation with peer and a number of academic elements of anxiety may suggest a 'proneness' concept, but its lack of correlation with vocational anxiety and mathematics anxiety for the whole group ($r = 0.03$ and 0.01 respectively) suggests otherwise.

Academic Anxiety. Table 2 summarizes the major correlates of the four anxiety measures related to the core subjects English, Mathematics, Science and Social Studies.

Insert Table 2 about here

The table gives a clear indication of the interrelatedness of English, Science and Social Studies, with Mathematics Anxiety standing alone. Mathematics anxiety is reasonably dispersed ($s = 2.7$) and the low correlations are not an artifact of any ceiling effect. The causes of Mathematics anxiety are thus seen to be unique and as yet unidentified. The low correlation between Mathematics anxiety and Trait anxiety is also reported by Betz (1978).

The correlates of the remaining core subjects reflect a similar pattern to trait anxiety, with conventional, socially oriented variables playing a major role. This by no means suggests causality - either high anxious individuals seek status and peer approval, or seeking

status and peer approval creates anxiety. Mathematics anxiety is unique, perhaps the public image of Mathematics as generally difficult removes the peer related component, leaving anxiety intrinsically related to the subject.

Inspection of the correlations for males and females separately reveals little additional information. There is a tendency, however, for correlates for females to reflect the conventional/social dimensions, whereas correlations for males typically reflect characteristics of the subject matter. Females tend to score higher on extrinsic motivation, self-control, and infrequency than males, suggesting an overall greater concern for meeting the expectations of others. As the threat from peers is low, this lowers the levels of anxiety in all subjects but Science, which typically has a heavy sex bias towards males.

It is important to note that academic anxiety is not related at all to the level of study of the student (Basic - Advanced), although its relationship to achievement within each stream cannot be tested at this point in the research.

Vocational Anxiety also reflects these trends. The topic is fully discussed in Docking and Thornton (1979b) who conclude:

> The results give some indication of the harmful effects of the encouragement of competitive, extrinsically rewarded teaching practices. The evidence suggests that by teaching children to seek rewards and direction from outside themselves, schools are raising anxiety levels and limiting vocational choices. These prejudicial effects are more severe with females.

Peer Anxiety. The significance of peer anxiety in the academic areas has been indicated above. Table 3 indicates other correlates of peer anxiety.

Insert Table 3 about here

A low trait-peer correlation for males, and a relatively high correlation for females indicates the pervasive nature of peer anxiety as a determinant of general levels of anxiety for females. The highest correlates for males refe red to specific subjects, indicating their evaluation of threat is more academically based. Overall results repeat the same package of correlates found in the academic and trait areas, with the social/status orientation playing a significant role in the determination of peer anxiety.

It is interesting to note that just as different levels of academic streaming are unrelated to academic anxiety, social levels are unrelated to peer anxiety. No significant correlations were found between the variables of influence, centrality, or prestige with peer anxiety for either sex in any of the friendship groupings.

DISCUSSION

School-related Anxiety Levels. The order of severity of anxiety across the four core academic areas, viz: English, Social Studies, Science and Mathematics, has been observed in previous studies conducted by the author. This seems to reflect dependence upon Mathematics and/or dependence upon pre-requisite studies. Mathematics anxiety is becoming an increasingly significant area of study, but the phenomenon may not be intrinsic to the subject matter, but rather to the need to achieve mastery of each level in order to make subsequent levels meaningful. The effects of abstract symbolism, computation, or sequential dependence upon anxiety responses to other areas of study requires further investigation.

The levels of peer anxiety and its significance in relation to other forms of anxiety are of interest. While the anxiety responses of females are clearly tied to peer evaluations, they are not as severely threatened as males, who tend to judge their peer status by academic standing. Coping with anxiety is potentially more easily achieved by females by adjusting their peer affiliation; males on the other hand, appear to have to meet the demands of their studies to minimise anxiety.

In contrast to peer anxiety, vocational anxiety is high and undifferentiated by sex. Both males and females are disturbed by the uncertainties surrounding future employment prospects and neither are able to alleviate the feeling by direct action.

Correlates of school-related anxiety. The personality dimensions of Masculinity, Status, Infrequency, Self-Control, and Extrinsic Motivation stand out as major correlates of anxiety reported by secondary-school students. The first of these are described by Holland (1975) as 'empirical' scales to measure personal effectiveness. Their characteristics are summarized in Table 4.

Insert Table 4 about here

It is clear from these descriptions, their correlations with anxiety, and their intercorrelation that those who experience high levels of anxiety are conforming, socially oriented, status seeking individuals (Masculinity and Status) and at the same time, insecure, inhibited, incompetent and self-depreciating (Infrequency and Self-Control).

Females tend to be over-represented in this group scoring significantly higher on Self-Control and Infrequency. If the anxiety/VPI correlations are recalculated for each sex the significance of these variables is eliminated almost entirely.

The data suggests that while females are not generally more anxious than males, there is a group who tend to have high aspirations yet lack ability and self-confidence and who as a result, experience high levels of anxiety. This, too, is reflected by the positive relationship observed between extrinsic motivation and anxiety, and sex.

The importance of these sex-related effects is apparent from other reports (Hagtvet (1978)) and the significance of anxiety in women has been the focus of a number of studies (for example, Shand and Grau (1977), Goldfried and Sobocinski (1975)). Hagtvet, in a study of

the components of test anxiety in explicity defined situational contexts found women to be more sensitive to statements of anxiety that reflected the valuation by others. Hagtvet (1978) states "it seems that girls are affected by their anxiety reactions, i.e. self-oriented reactions in a more general interpersonal evaluative context than boys" and "girls' role demands from both the teacher and other pupils seem to interfere with their intellectual academic performance". Boys, he continues, are not effected in the same way (p.983).

The conflict between high aspiration and low self concept has been studied by Shand and Grau (1977) who showed that women who revealed a discrepancy between perceived self and ideal self also had high levels of anxiety. Those who scored high on anxiety indicated they would like to develop more self-control, foresight and clear-thinking, and less excitability, suspicion and jealousy. These findings corroborate closely with the findings of the present study.

Heys (1974), in a study of the correlates of Test Anxiety (TASC) in primary school children found a similar sex difference. Factor analysis revealed a trait-like factor "concerning the possibility of being negatively evaluated by others" for girls, but for boys, the factor was more academically linked "concerning the likelihood of making public errors" (p.192). Girls' anxiety was more generalized across classroom situations and to situations remote from the classroom, than for boys, supporting the sex differences reported in this study.

CONCLUSIONS.

The experience of anxiety of secondary school children is a complex phenomenon related to sex, self-concept, aspiration and social influences. Clearly if attempts are to be made to help children alleviate anxiety, approaches that simply mask or suppress the emotion and fail to take into account the antecedents will be of little long-term use. Effective coping is more likely to involve coming to terms with the reality of the situation, increasing self-awareness, reducing dependence upon others and developing realistic aspirations or making purposive constructive steps towards ambitions. The effects of anxiety upon social and academic achievement and the identification of strategies to constructively cope with anxiety, are the objectives of research now underway.

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TABLE 1

Major Correlates* of Trait Anxiety

Extrinsic Motivation	.62
English Anxiety	.60
Science Anxiety	.49
Social Studies Anxiety	.48
Peer Anxiety	.75
Self Control	.32
Masculinity	.62
Status	.74
Infrequency	.74

*Correlations of .316 and above.

TABLE 2

Major Correlates* of Academic Anxiety

	English	Mathematics	Science	Social Studies
Trait Anxiety	.60	-	.50	.48
Peer Anxiety	.64	-	.49	.48
Masculinity	.47	-	.31	.44
Status	.60	-	.54	.45
Infrequency	.62	-	.59	.44
Extrinsic Motivation	.59	-	.43	.39
Self-Control	.31	-	.41	-
Sex (Male = 1, F = 2)	-	-	.37	-

*Correlations of .216 and above.

TABLE 3

Major Correlates* of Peer Anxiety

Trait	.75
Extrinsic Motivation	.64
Social Occupation	.32
Self Control	.32
Masculinity	.55
Status	.66
Infrequency	.70

*Correlations of .316 and above.

TABLE 4

Characteristics of High Scorers on Masculinity, Status, Infrequency and Self-Control Scales.

(From Holland, 1975)

Masculinity:	Identifies with male dominated occupations. Shrewd, competitive, conforming.
Status:	Indicates subject's expectation of and need for status or prestige, and high self-confidence. Sociable, adventurous, enthusiastic, expressive, dependent.
Infrequency:	Indicates incompetency, self-depreciation, personal failure, unpopularity, low aspiration level.
Self-Control:	Inhibited, passive, responsible, insecure.

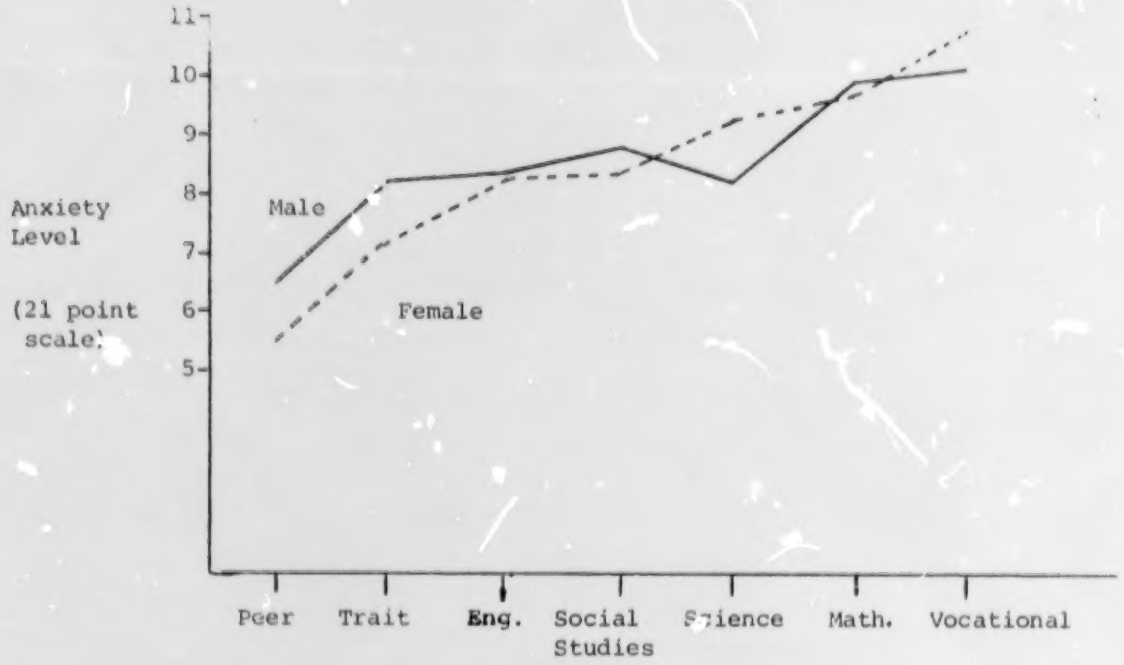

FIGURE 1. MEAN ANXIETY LEVELS.